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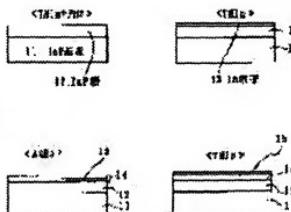
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## (54) MANUFACTURE OF SEMICONDUCTOR DEVICE

### (57)Abstract:

**PURPOSE:** To prevent the dropping of group V elements from crystal surface or from the vicinity of the surface and prevent their reaction with other group V elements present in the atmosphere by depositing group III atoms of monoatoms or a molecular layer on the surface of a semiconductor layer and by giving a heat treatment at a temperature not lower than the temperature of this deposit.

**CONSTITUTION:** On the surface of InP substrate 11, an InP layer 12 which becomes a barrier layer is grown at 600° C. Then, a TMIn pulse is supplied to the top of the InP layer 12, a layer of In atom 13 is deposited by ALE method for covering the surface of the InP layer 12, and the temperature inside a reaction chamber is lowered to 500° C. In succession, an AsH<sub>3</sub> is supplied. As atoms are laminated on the In atoms 13 by ALE method thereby forming an InAsI molecular layer 14, and the AsH<sub>3</sub> is stopped. Immediately after this, a TMIn pulse is supplied, one layer of In atom 15 is formed on the top surface of the InAsI molecular layer 14, and the temperature of reaction chamber is raised again to 600° C. By doing this, a protection layer of group III atoms is deposited on the surface of the semiconductor film where the group V elements are exposed.



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